

Amendments to the Drawings:

The attached sheets of drawings include changes to Figs. 1-3. The first sheet, which includes Fig. 1, replaces the original sheet including Fig. 1. The second sheet, which includes Fig. 2, replaces the original sheet including Fig. 2. The third sheet, which includes Fig. 3, replaces the original sheet including Fig. 3. In Figs. 1-3, labels have been added to the reference numbers.

Attachment: Replacements Sheets

REMARKS

In the Office Action, claims 1-45 were rejected. Claims 8, 23, and 36 have been amended. Applicant requests reconsideration in view of the following remarks.

I. Drawings

The Examiner objected to Figs. 1-3 because labels for the reference numbers were missing. Figs. 1-3 have been corrected.

II. Claims Objections

Claims 8, 23, and 36 were objected to for informalities. Claims 8, 23, and 36 have been amended as suggested by the Examiner.

III. Claim Rejections – 35 USC 103**A. Claims 1-4, 20, and 21**

Claims 1-4, 20, and 21 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,860,907 (the Marshall reference) in view of U.S. Patent No. 3,508,195 (the Sellers reference).

1. The Sellers Reference Discloses Correcting a Single Data Block.

Claims 1 and 20 disclose, “correcting/correct the data blocks in data segments, wherein a data segment includes data from a portion of each of the plurality of data blocks.” (Emphasis added.) Note, a data segment, which is what is corrected, includes data from a portion of each of the plurality of data blocks. The Examiner concedes that the Marshall reference does not disclose this limitation. The Examiner, however, asserts that the Sellers reference discloses this limitation. Applicant disagrees, and asserts that the Sellers reference merely discloses correcting a single data

block rather than data blocks in data segments, wherein a data segment includes data from a portion of each of the data blocks.

The Examiner cites to column 1, lines 24-26 of the Sellers reference. This cited portion discloses, “[e]rror location and correction for the block is done by using only the VRC and CRC redundancies.” (Emphasis added.) Note, that the portion cited to by the Examiner explicitly states that the error location and correction is for a single block (i.e., the block).

The Examiner next cites to column 3, lines 14-16 of the Sellers reference. This cited portion discloses, “[i]t is another object of this invention to provide a control means for a storage medium enabling error correction of data read from the storage medium.” While this cited portion refers to “data” rather than “data block,” Applicant asserts that portions of the Sellers reference that precede and follow this cited portion makes it clear that the “data” is that of a single data block. In particular, column 3, lines 1-5 disclose, “[d]epending upon the particular design of the invention, it can locate an excess of 95 percent of the possible error patterns that can exist in any given common bit position of a data block.” (Emphasis added.) Additionally, column 3, lines 35-37 disclose, “[i]t is further object of this invention to provide a data format which utilizes a cyclic redundancy check character written either before, after, or within a data block.” (Emphasis added.) Column 3, lines 44-50 disclose, “[i]t is an object of this invention to provide two types of redundancy for a stored data block, one type used for error correction, and the other type not used for error correction and providing a check on an error condition not properly handled by the error condition.” (Emphasis added.) Column 3, lines 69-74 disclose, “[t]his invention applies internal feedback in addition to end-around feedback to each of two cyclic storage means which respectively receive the data of a block, and byte redundancy indication from the block.” (Emphasis added.) Column 4, lines 19-24 discloses, “[a] particular type of third redundancy is another redundancy of the same data bits in the block, such as, for example, a longitudinal redundancy byte at the end of a block following a cyclic redundancy byte.” (Emphasis added.)

The Examiner then cites to column 9, line 45, to column 10, line 75 of the Sellers reference. Within the portion cited to by the Examiner, column 10, lines 24-30 discloses, “[a]t this time the

LRC register is sampled for error by circuits 45, 46, 47, the CRC register is sampled by circuits 51 and 52 to determine if an error occurred, and the read-write VRC latch is sampled to determine if there was a read-write VRC error during the reading of this block.” (Emphasis added.) Column 10, lines 39-45 discloses, “[t]he normal mode of operating [if an error occurs in reading from a track] is to backspace over the block just read and to reread it...” (Emphasis added.) Column 10, lines 50-54 discloses, “[i]n FIGURE 2 the calculation of track in error is done before the beginning of the second data read operation before the time in which the tape was picking up speed to again read the block.” (Emphasis added.)

Thus, the very portions of the Sellers reference cited to by the Examiner clearly disclose locating and correcting errors in a single data block using redundancies for that single data block. In contrast, claims 1 and 20 recite, “correcting/correct the data blocks in data segments, wherein a data segment includes data from a portion of each of the plurality of data blocks.”

Therefore, Applicant asserts that claims 1 and 20 are allowable because the proposed combination of the Marshall reference and the Sellers reference does not disclose each and every limitation of claims 1 and 20. Additionally, Applicant asserts that claims 2-4 and 21 are allowable for at least the reason that they depend from allowable independent claims.

2. The Marshall Reference Teaches Away from the Sellers Reference

The Examiner asserts, “it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Marshall’s patent with the teachings of Sellers.” Applicant asserts that the Marshall reference teaches away from the Sellers reference.

In particular, in Fig. 1a and corresponding disclosure in column 4, lines 5-45, the Marshall reference discloses longitudinal recording tracks on a conventional magnetic tape. In column 4, lines 29-31, the Marshall reference discloses, “[c]onventional techniques will detect an error effecting any one or two of tracks T1-T9 and will correct an error in any one track.” Column 4, lines 31-32 discloses, “[e]rrors effecting more tracks either go undetected or uncorrected.” In

column 4, lines 32-44, the Marshall reference provides references to some conventional techniques. One of these is the Sellers reference.

Thus, the Marshall reference refers to short comings of the Sellers reference in detecting and correcting errors. Therefore, the Marshall reference teaches away from the Sellers reference rather than providing motivation for one skilled in the art to use the technique disclosed in the Sellers reference, which the Marshall reference discloses as having limitations.

Additionally, the Marshall reference refers to the Sellers reference in the context of longitudinal recording tracks on a conventional magnetic tape. Indeed, the Sellers reference only discloses longitudinal recording tracks. (See Figs. 194 and 197.) In particular, column 18, lines 36-40 discloses, “The described embodiment of the Tape Control can operate with either 9-track Tape Drives or 7-track Tape drives. The 9-track Drive provides in parallel 8 information bits and on parity bit. The 7-track Drive provides in parallel 6 information bits and one parity bit.” (Emphasis added.)

The Marshall reference, however, discloses detecting and correcting for errors that result from serially or sequentially recording diagonally on a magnetic tape. In particular, Fig. 1b depicts and column 4, lines 47-52 discloses, serially or sequentially recording information diagonally across the direction of motion of a tape. Column 4, line 62 – column 5, line 4 discloses the effect of a defect on a tape that is diagonally recorded is different than on a tape that is longitudinally recorded. In particular, as depicted in Fig. 2b and disclosed in column 5, lines 37-50, the defect on a portion of a tape that is diagonally recorded can result in loss of data that extends beyond the portion with the defect because of incorrect synchronization of sequential bits. Thus, the Marshall reference discloses a technique for re-synchronizing the sequential bits. (Column 3, lines 26-45; column 9, lines 19-54.)

The technique disclosed in the Marshall reference for re-synchronizing the bits in data blocks, however, is unique to diagonal recording with synchronized sequential bits. In particular, neither the Marshall reference nor the Sellers reference discloses that synchronized sequential bits

are used in longitudinal recording. Thus, there is no motivation to modify this technique with the technique disclosed in the Sellers reference of correcting a single data block using redundancies for the single data block. As disclosed by the Marshall reference, the bits can not be synchronized using a conventional ECC. (Column 5, line 55 – column 6, line 3.)

Therefore, Applicant asserts that claims 1 and 20 are allowable because there is no motivation to combine the Marshall reference and the Sellers reference. Additionally, Applicant asserts that claims 2-4 and 21 are allowable for at least the reason that they depend from allowable independent claims.

B. Claims 5-13, 18, 19, 22-26, 31, and 32

Claims 5-13, 18, 19, 22-26, 31, and 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Marshall reference in view of the Sellers reference and further in view of U.S. Patent No. 4,782,490 (the Tenengolts reference).

For the reasons set forth above, Applicant asserts that independent claims 1 and 20 are allowable. Thus, Applicant asserts that claims 5-13, 18, 19, 22-26, 31, and 32, which depend from independent claims 1 and 20, are allowable for at least the reason that they depend from allowable independent claims.

C. Claims 14-17 and 27-30

Claims 14-17 and 27-30 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Marshall reference in view of the Sellers reference, the Tenengolts reference, and U.S. Patent No. 5,905,740 (the Williamson reference).

For the reasons set forth above, Applicant asserts that independent claims 1 and 20 are allowable. Thus, Applicant asserts that claims 14-17 and 27-30, which depend from independent claims 1 and 20, are allowable for at least the reason that they depend from allowable independent claims.

D. Claims 33, 34

Claims 33, 34 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Marshall reference in view of the Sellers reference, and U.S. Patent No. 6,845,475 (the He reference).

Independent claim 33 recites, “determining if the number of data blocks with errors exceeds a number of redundancy blocks retrieved from the storage medium.” Claim 33 also recites, “when the number of data blocks with errors exceeds the number of redundancy blocks, correcting the data blocks in data segments, where a data segment includes data from a portion of each of the plurality of data blocks retrieved from the storage medium.”

Thus, for at least the reasons set forth above with regard to claims 1 and 20, Applicant asserts that claim 33 is allowable. Applicant also asserts that claim 34 is allowable for at least the reason that it depends from an allowable independent claim.

E. Claims 35-39, 44, and 45

Claims 35-39, 44, and 45 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Marshall reference in view of the Sellers reference, the He reference, and the Tenengolts reference.

For the reasons set forth above, Applicant asserts that independent claim 33 is allowable. Thus, Applicant asserts that claims 33-39, 44, and 45, which depend from independent claim 33, are allowable for at least the reason that they depend from an allowable independent claim.

F. Claims 40-43

Claims 40-43 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Marshall reference in view of the Sellers reference, the He reference, the Tenengolts reference, and the Williamson reference.

For the reasons set forth above, Applicant asserts that independent claim 33 is allowable. Thus, Applicant asserts that claims 40-43, which depend from independent claim 33, are allowable for at least the reason that they depend from an allowable independent claim.

IV. Conclusion

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, Applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 249212025400. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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Respectfully submitted,

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